

REMARKS

Claim 42 is amended. Claims 33-41, 48-51, 53-59, 60-66 and 68-72 are cancelled. Claims 42-47 are in the application for consideration.

Independent claim 42 is amended to clarify/emphasize that it is the semiconductor bottom portion of the second isolation trench portion which is doped, as is inherent from Applicant's specification at p.11.

Independent claim 42 stands rejected as being obvious over U.S. Patent No. 5,994,198 to Hsu et al. in view of U.S. Patent No. 6,274,457 to Sakai et al. in one instance, and as obvious over the Hsu et al. patent in view of U.S. Patent No. 6,081,662 to Murakami et al. in another instance. Applicant disagrees and requests reconsideration.

It is respectfully asserted that the Examiner has mischaracterized the Hsu et al. teaching. Specifically, Hsu et al. more than merely fails to disclose or teach the relevant trench sidewall portion and angles of Applicant's independent claim 42. Rather, it expressly illustrates and teaches a trench with entirely vertical sidewalls. See each of the figures of Hsu et al. and the text pertaining thereto. Moreover, the vertical sidewalls of Hsu et al. represent the very feature taught against by Sakai et al. Specifically, at col.2, lns.1-15, Sakai et al. clearly teaches that such a feature would undesirably cause an adverse electric field. Thus, persons of ordinary skill in the art, keeping in mind Sakai et al., would view Hsu et al. as undesirably allowing for electric field problems with its device. Conversely, the artisan keeping in mind Hsu et al. would view Sakai et al. as requiring unnecessary cost and time in carrying out a complex trench isolation

process. Such contrary teachings discourage one of ordinary skill in the art from attempting such a combination. (See, *In re Young*, 927 F.2d 588, 18 U.S.P.Q.2d 1089 (Fed. Cir. 1991), indicating that when the prior art contains conflicting references, the inability of each reference to suggest solutions to one of ordinary skill in the art must be considered). Accordingly, the Examiner mischaracterizes Hsu et al. as merely failing to disclose the relevant trench sidewall portions and angles, and Sakai et al. specifically teaches against utilizing the very teachings of Hsu et al. Thus, the Examiner has failed to meet the *prima facie* burden for rejection of Applicant's independent claim 42 as being obvious over a combination of these two references, or any established *prima facie* obviousness is overcome by the above argument as the references teach against the combination which the Examiner makes. For at least this reason, the obviousness rejection of claim 42 over Hsu et al. in view of Sakai et al. is in error and should be withdrawn. Action to that end is requested.

A similar argument applies relative to the Examiner's rejection of independent claim 42 as being obvious over a combination of Hsu et al. and Murakami et al. The Murakami et al. reference likewise teaches against the vertical sidewall structures of Hsu et al. (see col.1, ln.59 - col.2, ln.13, and Fig. 29C of Murakami et al.) in favor of trenches with curved corners, tapered sidewalls and/or non-planar surfaces. Accordingly, the vertical sidewalls of Hsu et al. represent the very feature taught against by Murakami et al. in its disclosure. The teachings of Murakami et al. and Hsu et al. are contrary with respect to sidewall fabrication in an isolation trench, thereby discouraging one of

ordinary skill in the art from attempting the combination which the Examiner has made. Accordingly, the rejection of independent claim 42 over the combination of Murakami et al. and Hsu et al. is seen to be in error, and should be withdrawn. Action to that end is requested.

The various Examiner rejections over independent claim 42 only resulted from hindsight reconstruction utilizing Applicant's disclosure as a road map for the combination. There is a lack of suggestion or motivation to combine the references which the Examiner has combined. Specifically, the references cannot be combined where the reference teaches away from their combination. An Examiner cannot merely pick and choose from the desirable portions of the references to the exclusion of other teachings of the references. The references as a whole must be considered, and the applied references suggest against making the combination of Hsu et al. with either Sakai et al. or Murakami et al. Accordingly, independent claim 42 as presented herein is seen to be allowable.

Applicant's dependent claims should be allowed as depending from an allowable base claim, and for their own recited features which are neither shown nor suggested in the cited art. Action to that end is requested.

An earnest attempt has been made to place this application in immediate condition for allowance, and action to that end is requested

Respectfully submitted,

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